

CLAIMS

What is claimed is:

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1. A display controller for receiving video data from a data bus in a component YUV format and storing the video data to a display memory in a pixel video format, said display controller comprising:

bus interface means, coupled to the data bus, for receiving video data in a component YUV format and corresponding video data addresses within a predetermined address range; and

a display memory controller, coupled to said at least one memory configuration register and said bus interface means, for receiving video data in a component YUV format and corresponding video data addresses within a predetermined address range and for storing said video data in a pixel video format in a display memory.

2. The display controller of claim 1 wherein said video data comprises luminance and chrominance difference data and said component YUV format comprises a first contiguous block of luminance data and at least a second contiguous block of chrominance difference data.

3. The display controller of claim 2 wherein said display memory controller receives the first contiguous block of luminance data and stores the first contiguous block of luminance data in at least one byte lane within the display memory.

4. The display controller of claim 3 wherein said display memory controller receives the at least a second contiguous block of chrominance difference data and stores the at least a second contiguous block of

chrominance difference data in at least another byte lane within the display memory.

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5. The display controller of claim 4, wherein said first contiguous block of luminance data comprises one frame of luminance data.

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6. The display controller of claim 5, wherein said at least a second contiguous block of chrominance difference data comprises one frame of chrominance difference data.

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7. The display controller of claim 6 wherein said at least one byte lane comprises a plurality of pairs of adjacent byte lanes, each pair of the plurality of pairs of byte lanes for storing pairs of luminance data for one line of one frame of video data.

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8. The display controller of claim 7 wherein said at least one byte lane comprises a plurality of pairs of adjacent byte lanes, each pair of the plurality of pairs of byte lanes for storing pairs of chrominance difference data for one line of one frame of video data.

6/ 5/
9. The display controller of claim 8, wherein said chrominance difference data is stored in every other line of each of said plurality of pairs of byte lanes and said display controller further comprises a bit block transfer engine for transferring blocks of data within the display memory, wherein said bit block transfer engine replicates chrominance data from every other line of said plurality of pairs of byte lanes to a corresponding adjacent line within said plurality of pairs of byte lanes.

7/ 6/
10. The display controller of claim 9 wherein said bit block transfer engine replicates chrominance data

after said display memory controller has completed storing one frame of video data in the display memory.

~~8/~~ 11. The display controller of claim ~~10~~ ⁷ wherein said display controller outputs a signal through said bus interface to a host processor indicating completion of a bit block transfer operation.

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12. A method for assisting decoding of video data partially decoded in a host processor, said method comprising the steps of:

receiving, in a display controller, video data in a component YUV format and corresponding video data addresses within a predetermined address range, and

storing the video data in a pixel video format in a display memory.

13. The method of claim 12 wherein the video data comprises luminance and chrominance difference data and the component YUV format comprises a first contiguous block of luminance data and at least a second contiguous block of chrominance difference data.

14. The method of claim 13 wherein the step of storing comprises the step of storing the first contiguous block of luminance data in at least one byte lane within the display memory.

15. The method of claim 14 wherein the step of storing further comprises the step of storing the at least a second contiguous block of chrominance difference data in at least another byte lane within the display memory.

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~~16.~~ The method of claim 15, wherein the first contiguous block of luminance data comprises one frame of luminance data.

~~17.~~ The method of claim ~~16~~, wherein the at least a second contiguous block of chrominance difference data comprises one frame of chrominance difference data.

~~18.~~ The method of claim ~~17~~ wherein the at least one byte lane comprises a plurality of pairs of adjacent byte lanes, each pair of the plurality of pairs of byte lanes for storing pairs of luminance data for one line of one frame of video data.

~~19.~~ The method of claim ~~18~~ wherein the at least one byte lane comprises a plurality of pairs of adjacent byte lanes, each pair of the plurality of pairs of byte lanes for storing pairs of chrominance difference data for one line of one frame of video data.

~~20.~~ The method of claim ~~19~~, wherein the step of storing further comprises the steps of:

storing chrominance difference data in every other line of each of the plurality of pairs of byte lanes, and replicating, in a bit block transfer engine within the display controller, chrominance data from every other line of the plurality of pairs of byte lanes to a corresponding adjacent line within the plurality of pairs of byte lanes.

~~21.~~ The method of claim ~~20~~ wherein the bit block transfer engine replicates chrominance data after the display memory controller has completed storing one frame of video data in the display memory.

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~~22~~ 22. The method of claim ~~21~~ 15 further comprising the step of outputting a signal to a host processor indicating completion of a bit block transfer operation.